

Tall City – Telephone Road 138 kV Line RPG Discussion

September 15, 2020

Initial Thermal Violation (March Case Build)

Tall City – Telephone Road 138 kV Line

- Post-contingency overloads in both the 2021 and 2022 summer peak Steady-State Working Group (SSWG) cases published in March 2020
- Worst contingency is the loss of the Brown – Vealmoor 138 kV Line

March SSWG Cases

NERC Category	Contingency	Monitored Element	Percent Loading (2021 Summer)	Percent Loading (2022 Summer)
P0	-	Tall City – Telephone Road 138 kV Line	94%	93%
P1.2	Brown – Vealmoor 138 kV Line	Tall City – Telephone Road 138 kV Line*	122%	126%

*31 similar contingencies resulting in this line loading above its emergency rating

Initial Proposed Solution (March Case Build)

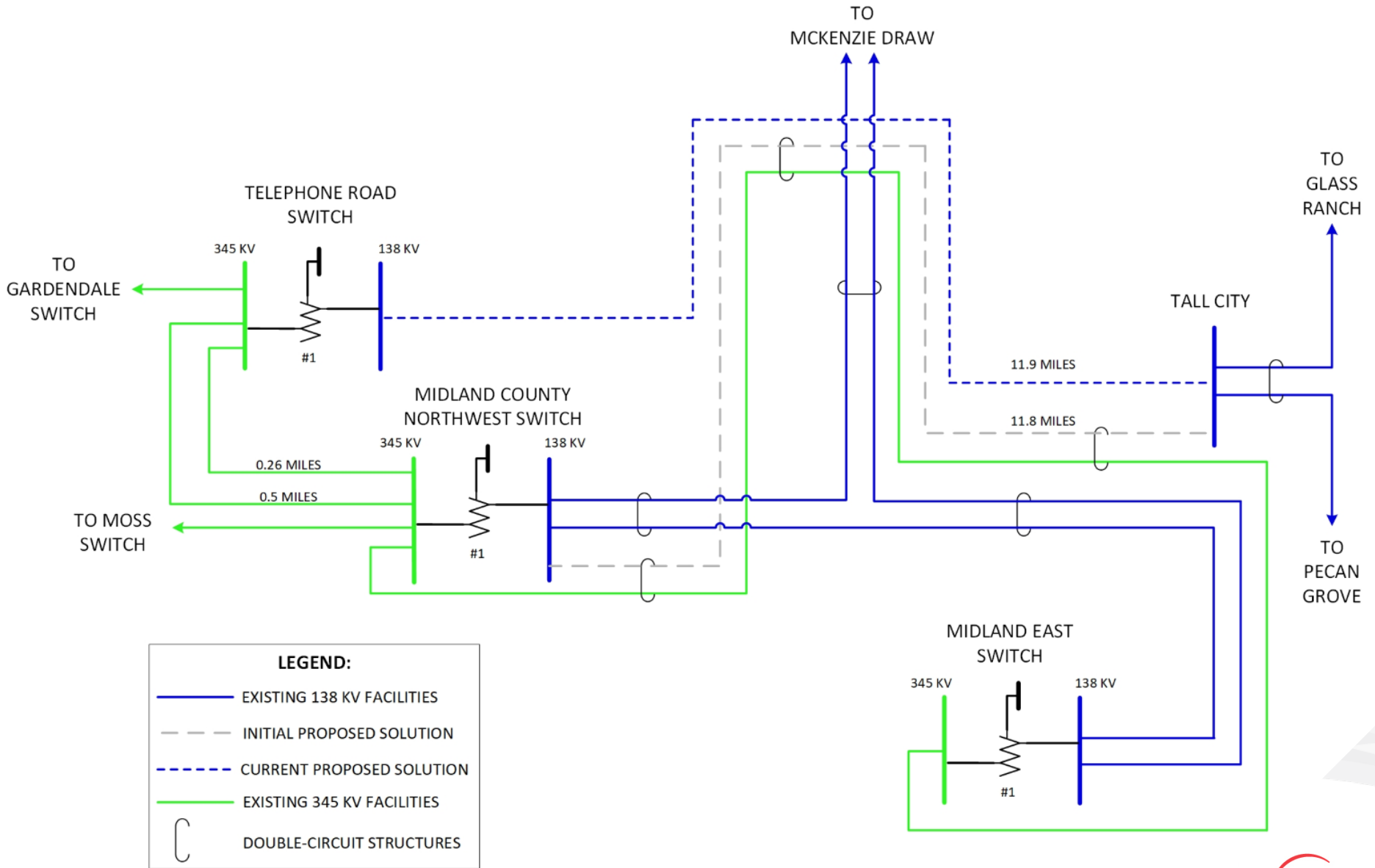
Add new Midland County Northwest – Tall City 138 kV Line

- Existing: Double Circuit Capable Lattice Towers – One Circuit of Bundled 795 ACSR Installed
- Proposed Scope:
 - Install a new bundled 795 circuit on vacant side
 - This circuit would be insulated at 345 kV but operated at 138 kV (1794 Amps @ 90 degrees Celsius maximum operating temperature) 429MVA
- Engineering Estimate
 - Working adjacent to energized line assumed: **\$8.8M**
- Relieves all post-contingency overloads in the 2021 and 2022 summer peak Steady-State Working Group (SSWG) cases published in March 2020

March SSWG Cases (With Proposed Project)

NERC Category	Contingency	Monitored Element	Percent Loading (2021 Summer)	Percent Loading (2022 Summer)
P0	-	Tall City – Telephone Road 138 kV Line	43%	43%
P1.2	Brown – Vealmoor 138 kV Line	Tall City – Telephone Road 138 kV Line	55%	57%

Area Map



Updated Thermal Violations (June Case Build)

Tall City – Telephone Road 138 kV Line

- PRE CONTINGENCY overload now appears in the 2021 and 2022 summer peak Steady-State Working Group (SSWG) cases published in June 2020
- Worst contingency is the loss of the Brown – Vealmoor 138 kV Line

June SSWG Cases

NERC Category	Contingency	Monitored Element	Percent Loading (2021 Summer)	Percent Loading (2022 Summer)
P0	-	Tall City – Telephone Road 138 kV Line**	112%	110%
P1.2	Brown – Vealmoor 138 kV Line	Tall City – Telephone Road 138 kV Line*	142%	147%

*31 similar contingencies resulting in this line loading above its emergency rating

**ERCOT also identified this overload in the 2020 RTP (2020-FW1)

Case Difference

Thermal loading on the Tall City – Telephone Road 138 kV Line increased in the June SSWG case

- Load increase on southern portion of the Stanton Loop and new generation

June SSWG Cases (With New Generation Off-line)				
NERC Category	Contingency	Monitored Element	Percent Loading (2021 Summer)	Percent Loading (2022 Summer)
P0	-	Tall City – Telephone Road 138 kV Line	94%	93%
P1.2	Brown – Vealmoor 138 kV Line	Tall City – Telephone Road 138 kV Line	129%	135%

Initial Proposed Solution (June Case Build)

Add new Midland County Northwest – Tall City 138 kV Line

Does not relieve all post-contingency overloads in the 2021 and 2022 summer peak Steady-State Working Group (SSWG) cases published in June 2020

June SSWG Cases (With Initially Proposed Project)

NERC Category	Contingency	Monitored Element	Percent Loading (2021 Summer)	Percent Loading (2022 Summer)
P0	-	Tall City – Telephone Road 138 kV Line	51%	51%
P1.2	Brown – Vealmoor 138 kV Line	Tall City – Telephone Road 138 kV Line	64%	65%
P1.2	Midland County Northwest – Tall City 138 kV Line	Tall City – Telephone Road 138 kV Line	112%	110%

New Proposed Solution

Project Details

- Rebuild only Tall City – Telephone Road 138 kV Line
 - 11.9 mile line rebuild
 - Existing 795 ACSR conductor 214 MVA single circuit structures
 - Proposed rebuild with 1926 ACSS/TW Conductor (2569 Amps @ 180 degrees Celsius Maximum Operating Temperature) 614 MVA
 - Steel Poles, double-circuit capable, single circuit installed
 - Engineering Estimate **\$23.5M**
 - Fall 2021 ISD

New Proposed Solution

Rebuild Tall City – Telephone Road 138 kV Line

- Relieves all base case and post-contingency overloads in the 2021 & 2022 and all future summer peak Steady-State Working Group (SSWG) cases published in June 2020

June SSWG Cases (With Proposed Project)

NERC Category	Contingency	Monitored Element	Percent Loading (2021 Summer)	Percent Loading (2022 Summer)
P0	-	Tall City – Telephone Road 138 kV Line	39%	39%
P1.2	Brown – Vealmoor 138 kV Line	Tall City – Telephone Road 138 kV Line	50%	52%

This project will be submitted as a Tier 3 project to the ERCOT RPG for review and comments.